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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,550	11/21/2003	Chih-Chun Yang	67,200-1109	3429

7590 09/01/2005
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EXAMINER
CHEN, KIN-CHAN

ART UNIT 1765	PAPER NUMBER
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DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,550

Applicant(s)

YANG ET AL.

Examiner

Kin-Chan Chen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected.

In the abstract, line 1, "0039" should be deleted.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Honda et al. (US 5,780,406).

Honda teaches a process for removing residues from a structure. An oxidant solution (e.g., hydroxylamine) may be provided. The oxidant solution may be heated to 60 degrees C and applied to the structure. See col. 3, lines 35-64; col. 4, lines 55-67.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Koito et al. (US 6,869,921) or Lee et al. (US 2003/0228990).

Koito et al. (US 6,869,921; col. 9 and col. 13, lines 25-28) or Lee et al. (US 2003/0228990; abstract; [0061]) teaches a process for removing residues from a structure. An oxidant solution (e.g., hydroxylamine) may be provided. The oxidant solution may be heated to about 80 degrees C from about 60 degrees C and applied to the structure.

5. Claims 9, 10 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Koito et al. (US 6,869,921).

Koito et al. (US 6,869,921; col. 9 and col. 13, lines 25-28) teaches a process for removing residues from a tungsten plug structure. An oxidant solution

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(e.g., hydroxylamine) may be provided. The oxidant solution may be heated to about 60 degrees C and applied to the tungsten plug structure.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 4, 7, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koito et al. (US 6,869,921) in view of Wolf (Silicon processing, vol. 1, page 51⁷) or Verhaverbeke (US 5,972,123; col. 4, line 55 through col. 5, line 4).

Koito et al. (US 6,869,921; col. 9 and col. 13, lines 25-28) teaches a process for removing residues from a tungsten plug structure. An oxidant solution (e.g., hydroxylamine) may be provided. The oxidant solution may be heated to about 60 degrees C and applied to the tungsten plug structure. The instant claims differ from Koito by specifying using conventional spraying method to apply the wet etching /or cleaning solution. Wolf or Verhaverbeke is only relied on to show conventional spraying method to apply the wet etching /or cleaning solution. Because it is a conventional method and because it is disclosed by Wolf or Verhaverbeke, hence, it would have been obvious to one with ordinary skill in

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the art to use spraying method in the process of Koito in order to efficiently carry out the wet etching /or cleaning process.

8. Claims 13, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koito et al. (US 6,869,921) as evidenced by admitted prior art.

Koito et al. (US 6,869,921; col. 9 and col. 13, lines 25-28) teaches a process for removing residues from a tungsten plug structure. An oxidant solution (e.g., hydroxylamine) may be provided. The oxidant solution may be heated to about 60 degrees C and applied to the tungsten plug structure. The instant claims differ from Koito by specifying the tungsten plug structure having at least one tungsten plug and a tungsten layer. Admitted prior art (Fig. 1B and 1C; page 4, lines 13-21) is only relied on to show the well-known structure in the art of semiconductor device fabrication. Because it is a well-known structure and because it is disclosed by admitted prior art, hence, it would have been obvious to one with ordinary skill in the art to incorporate said well-known structure in the process of Koito in order to meet specific product requirement.

9. Claims 15, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koito as evidenced by admitted prior art as applied to claims 13, 14, 17, and 18 above, and further in view of Wolf (Silicon processing, vol. 1, page 51) or Verhaverbeke (US 5,972,123; col. 4, line 55 through col. 5, line 4).

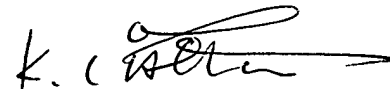
The instant claims differ from Koito by specifying using conventional spraying method to apply the wet etching /or cleaning solution. Wolf or

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Verhaverbeke is only relied on to show conventional spraying method to apply the wet etching /or cleaning solution. Because it is a conventional method and because it is disclosed by Wolf or Verhaverbeke, hence, it would have been obvious to one with ordinary skill in the art to use spraying method in the process of Koito in order to efficiently carry out the wet etching /or cleaning process.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 26, 2005


Kin-Chan Chen
Primary Examiner
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